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EXAMINER	
BULLOCK JR, LEWIS ALEXANDER	
ART UNIT	**PAPER NUMBER**
2126	17

DATE MAILED: 04/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/271,617	CHEYER ET AL.	
	Examiner	Art Unit	
	Lewis A. Bullock, Jr.	2126	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *02 February 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,5-10,14-21,25-28 and 39-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5-10,14-21,25-28 and 39-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 February 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1, 3, 5, 6, 15-17, 39, and 40 are rejected under 35 U.S.C. 102(b) as being anticipated by "InfoSleuth: Agent-Based Semantic Integration of Information in Open and Dynamic Environments" by BAYARDO et al.

As to claim 1, BAYARDO teaches a computer-implemented method for communication and cooperative task completion between a community of distributed electronic agents communicating using a dynamically expandable interagent communication language, ICL, (KQML) (pg. 197, Agent Communication Language) and at least on other distributed component system (Resource Agent system), the other distributed component system communicating using a protocol incompatible with the ICL (pg. 199, Resource Agent, "The Resource Agent has to translate queries expressed in a common query language (such as KQML/ KIF) into a language understood by the underlying system."), the method comprising the acts of: receiving by a bridge agent (Resource Agent) a description of functional capabilities of components (information source) of the other distributed component system from a component registry (registered resources and their capabilities) of the other distributed component system (pg. 197, "Resource Agent:...It also advertises the resources capabilities."); translating

the functional capabilities of components received from the protocol of the other distributed component system into the ICL (KQML), to create a translated description (pg. 197, Agent Interactions, "When a Resource Agent initializes, it sets up its connection to its resources and advertises the components of ontology (ies) that it understands to the Broker Agent."; pg. 199, Resource Agent, "The components of an example Resource Agent...The language processor translates a query expressed in terms of global ontology into a query expressed in terms of the Oracle database schema."); adding to a facilitator registry (registered agents and their capabilities) of the community of distributed agents the translated description (pg. 199, "As agents come online, they advertise their services to the broker via KQML...Minimally, an agent must advertise to the Broker its location, name, and the language it speak."; pg. 197, "When a Resource Agent initializes, it sets up its connection to its resource and advertises the components of ontology (ies) that it understands to the Broker Agent."), wherein the facilitator registry (registered agents and their capabilities with the Broker Agent) is distinct from the component registry (registered resources and their capabilities with the Resource Agent); responsive to a request (query) for service to the community of distributed agents delegating an ICL sub-goal request (decomposed query) to the bridge agent (Resource Agent) (pg. 197, "The Execution Agent takes the set of appropriate Resource Agents, decomposes the query, and routes it appropriately.") ; translating at the bridge agent (Resource Agent) the delegated ICL sub-goal request (decomposed query) into the incompatible protocol of the other distributed system to create a translated request (pg. 197, "Each Resource Agent translates the query from

the query domain's global ontology into the resource-specific schema..."); and invoking one or more components of the other distributed component system using the translated request (pg. 197, "...fetches the results and returns them to the Execution Agent."; pg. 199, "The Resource Agent also needs to answer queries...the resource agent sends them to the information source for execution, and translates the answers back into the format understood by the requesting agent.").

As to claim 3, BAYARDO teaches the request for service is received from an agent capable of communicating in the ICL (KQML) (pg. 197, User Agent, "Currently, the agents query the task execution agents using KQML with SQL content.").

As to claim 5, BAYARDO teaches the acts of: receiving functional capabilities of a distributed electronic agent (resource agents); adding the functional capabilities to the facilitator registry (registered agents and their capabilities with the Broker Agent) (pg. 197, "When a Resource Agent initializes, it sets up its connection to its resource and advertises the components of ontology (ies) that it understands to the Broker Agent."); determining a second ICL sub-goal (decomposed query) necessary to accomplish the request for service (query); selecting from the facilitator registry (registered agents and their capabilities with the Broker Agent) an agent capable of completing the second ICL sub-goal (via querying the Broker agent); and delegating the second ICL sub-goal (decomposed query) to the selected agent (Resource Agent) (pg. 197, Agent Interactions, "On receive a request...The Execution Agent reassembles the results and

returns them to the User Agent, which then returns the results to the user's Viewer applet for display.").

As to claim 6, BAYARDO teaches the components are data objects and the agents are written in Java (pg. 199-200, Implemention, Resource Agent, Implementation). Therefore it is inherent that components are software-based objects.

As to claims 39, 15-17, reference is made to a computer readable medium that corresponds to the method of claims 1, 3, 5, and 6 and is therefore met by the rejection of claims 1, 3, 5 and 6 above.

As to claim 40, reference is made to a software computer architecture that corresponds to the method of claim 1 and is therefore met by the rejection of claim 1 above.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 2. 14, and 41 are rejected under 35 U.S.C. 103(a) as being unpatentable over "InfoSleuth: Agent-Based Semantic Integration of Information in Open and

Dynamic Environments" by BAYARDO et al. in view of "Information Brokering in an Agent Architecture" by MARTIN et al.

As to claim 2, BAYARDO substantially discloses the invention above. However, BAYARDO does not teach the request for service is generated by one of the components.

MARTIN teaches the request for service is generated by one of the components of the other distributed component system (information source), and comprising the acts of: transmitting the request for service to the bridge agent (Broker); and translating the request for service into the ICL (broker schema) (pg. 12, "The Broker also provides the capability of answering queries that are expressed in the schema of the information source, rather than the broker schema."; pg. 13, "But in addition, this legacy source may also act as an information requestor, submitting queries that are formulated in terms of its source schema. (A syntactic translation may be needed to place the query in ICL syntax, but in most cases, this is relatively straightforward to implement."). Therefore, it would be obvious to combine the teachings of BAYARDO with the teachings of MARTIN in order to facilitate transparent access in either a source or broker schema to a variety of information sources (abstract).

As to claim 14, reference is made to a computer readable medium that corresponds to the method of claim 2 and is therefore met by the rejection of claim 2 above.

As to claim 41, BAYARDO substantially discloses the invention above. However, BAYARDO does not teach the bridge agent is integral with the facilitator.

MARTIN teaches the bridge agent is integral with the facilitator (pg. 7, figure 1). Therefore, it would be obvious to combine the teachings of BAYARDO with the teachings of MARTIN in order to work in close cooperation with another agent in an agent architecture (pg. 6-7).

5. Claims 7-10, 18-21, and 25-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over "InfoSleuth: Agent-Based Semantic Integration of Information in Open and Dynamic Environments" by BAYARDO et al.

As to claims 7-10, BAYARDO teaches the agents are objects and a user agent communicates with data objects through a resource agent. However, BAYARDO does not teach that the other distributed component system utilizes a distributed object service or that service is Jini, Corba, or Java service. "Official Notice" is taken that JINI, CORBA, and Java are well-known object oriented software services for communication between objects. Therefore, it would be obvious to one of ordinary skill in the art at the time of the invention to combine the teachings of BAYARDO with the well known distributed object services in order to communicate with between a variety of objects that implement different object services.

As to claims 18-21, reference is made to a computer readable medium that corresponds to the method of claims 7-10 and is therefore met by the rejection of claims 7-10 above.

As to claims 25-28, reference is made to a software computer architecture that corresponds to the method of claims 7-10 and is therefore met by the rejection of claims 7-10 above.

Response to Arguments

6. Applicant's arguments filed 2/2/04 have been fully considered but they are not persuasive. Applicant details that the claims require a component registry that is distinct from a facilitator registry such that the component registry contains the description of the functional capabilities of the other distributed component system and therefore distinct from the facilitator registry (response, pg. 11). The examiner agrees in that there exists two distinct registries in the claims and sets forth that Bayardo teaches the distinct registries. As detailed on page 12, of the response the examiner has mapped the facilitator to Bayardo's Broker Agent and the bridge agent to Bayardo's Resource Agent. The examiner has mapped the components of the other distributed component system to be the resources / information sources / local data sources that are registered to the Resource Agent. Bayardo teaches that when a Resource Agent initializes, it sets up its connection to its resource and advertises the components of ontology (ies) that it understands to the Broker Agent (pg. 197, Section 2.3 Agent

Interaction, 3rd paragraph) and when the Broker Agent initializes, each Agent advertises its address and function to the Broker Agent (pg. 197, Section 2.3 Agent Interaction, 2nd paragraph). The Resource Agents have the purpose of making information contained in an information source available for retrieval or update (pg. 199, Resource Agent, 1st paragraph). It acts as an interface between a local data source and other InfoSleuth agents, hiding specifics of the local data organization and representation wherein the content information that are of potential interest to other agents are (1) metadata information, (2) values of chosen data objects, and **(3) the set of operations allowed on the data**. The advertisement information can be sent by the Resource Agent to the broker at the start-up time or extracted from the Resource Agent during the query processing stage. Bayardo's Resouce Agent also answers queries and must translate queries expressed in a common query language into a language understood by the underlying system (pg. 199, Section 3.4, Resource Agent, 2nd paragraph – 4th paragraph). The Broker Agent is a semantic "match-making" service that pairs agents seeking a particular service with agents that can perform that service. As agents come on line, they advertise their services to the broker via KQML (pg. 199, Section 3.3 Broker Agent, 1st paragraph – 2nd paragraph). Therefore, based on the description of the Resource Agent and the Broker Agent provided above, both agents have a registry of the capabilities / functions of the components it interacts with. For instance, all operations of the information source / resource / local data source are stored with the Resource Agent, by virtue of the Resource Agent acting as an interface between the data source and other agents and hiding specifics of the local data organization and

representation; such that it is translated from its native language to KQML and advertised to the Broker Agent for storage in order to advertise their services. Therefore, Bayardo adequately teaches a component registry (local data organization and representation / content information regarding the set of operations allowed on the data) that is distinct from a facilitator registry (sent advertisement of those services from all agents including the Resource Agent) such that the component registry contains the description of the functional capabilities (set of operations allowed on the data) of the other distributed component system (resources / information source / local data source) and therefore distinct from the facilitator registry (advertisement of services of all agents). Therefore, the examiner believes the Bayardo adequately meets the claim limitations as disclosed.

Applicant then details an example in order to further clarify the position (pg. 12, lines 1-18; pg. 13, lines 1-7). The examiner disagrees that Bayardo does not teach the cited limitation and refers to the explanation given above.

Applicant then argues that a resource agent, in Bayardo, is merely one of the agents that advertise its capabilities in the SINGLE registry disclosed in BAYARDO and that it can be seen that a resource agent is a specialized agent that represent the information resources. In responding, the examiner first agrees that the Resource Agent does advertise its capabilities to the registry of the Broker Agent as explained above. However, there exists another registry within the Resource Agent since the Resource Agent acts as an interface between a local data source and other InfoSleuth agents, i.e. the Broker Agent, and hides specifics of the local data organization and

representation wherein such data information consists of (1) metadata information, (2) values of chosen data objects, and **(3) the set of operations allowed on the data**. Such information is either advertised to the Broker at start up or extractable from the Resource Agent during the query processing stage. The Resource Agent also must translate common query language queries into a language understood by the underlying system by mapping between ontology concepts and terms and the local data concepts and terms, as well as between the common query language syntax, semantics, and operators, and those of the native language (pg. 199, Resource Agent). Therefore, the Resource Agent also contains a registry of the data and operations of its data objects / resources / local data sources in order to translate queries to and operate on its local data sources. Secondly, the examiner notes that none of the claims detail limitations that would enable Bayardo's Resource Agent to not be a bridge agent as disclosed in the claims. The examiner cannot find any limitations set forth in the claims that would enable the Resource Agent to not read upon the cited bridge agent. Therefore, the based on the explanation given the examiner believes that the limitation regarding the bridge agent has been met as disclosed above.

Applicant then argues that the resource such as a database shown in Fig. 1 of Bayardo is not the equivalent of Applicant's "other distributed component system." (response, pg. 13, lines 8-13) The examiner disagrees. Applicant's arguments fail to comply with 37 CFR 1.111(b) because they amount to a general allegation that the claims define a patentable invention / limitation without specifically pointing out how the language of the claims patentably distinguishes them from the references. Applicant's

argument that the resource is not the other distributed component system does not include how the language of the claim distinguishes the resource from not being the distributed component system. The examiner notes that Applicant has made subsequent statements after the assertion, i.e. that the database is an information repository, however, these statements still do not distinguish how the language of the claims patentably distinguishes them from the reference, i.e. how the language of the distributed component system is not a resource. Further, Applicant states that the database has no separate and distinct broker agent where another set of agents can advertise their capabilities. In response, the examiner would like to point out that there exist no language within the claims that the distributed component system has another broker agent where another set of agents can advertise their capabilities. The claims at best, detail a bridge agent that sends from its component registry a description of functional capabilities of components of the other distributed component system such that they are translated and registered with the facilitator registry wherein subsequent to a request for service, a sub-goal request is delegated and translated to the bridge agent to invoke a component. The examiner has described the teachings of Bayardo in extensive above and in the rejection and therefore maintain that the cited teachings are met as disclosed. The examiner cannot interpret Applicant's argument of the component system having another separate and distinct broker agent where another set of agents can advertise their capabilities into the claim language because the limitation is not disclosed in the claims. Therefore, the examiner believes the Bayardo adequately teaches a bridge agent (Resource Agent) that sends from its component registry (meda-

data information on data and operations) a description of functional capabilities (advertisement of services) of components (resources) of the other distributed component system such that they are translated and registered with the facilitator registry (registry of services) wherein subsequent to a request (query) for service, a sub-goal request (sub-query) is delegated and translated to the bridge agent (Resource Agent) to invoke a component (resource) and maintains the rejection as disclosed above.

Applicant then argues that the Bayardo teaches a method for information retrieval rather than fulfillment of a service request (response, pg. 13, lines 16-17). In responding, the examiner would first like to point out that requesting for information is a service request wherein the service is the retrieval of the data. Secondly, the Bayardo teaches that the Broker Agent is a semantic "match-making" service that pairs **agents seeking a particular service with agents that can perform that service**. Therefore, Bayardo does teach the fulfillment of a service request.

Applicant then argues that the claim requires "functional capabilities" rather than mere interchange of data wherein the purpose of the Resource agent is to make information contained in an information source available for retrieval and update (response, pg. 13, line 18 – pg. 14, line 2). Applicant states that the retrieval of data and/or updating of data is not the same as functional capabilities (response, pg. 14, line 3-6). Applicant supports this argument by making reference to an example of "Being able to make coffee" as a functional capability. The examiner disagrees. First, the examiner would like to point out that Bayardo teaches the content information that is of

interest to other agents include 1) metadata information, (2) values of chosen data objects, and **(3) the set of operations allowed on the data**. Bayardo also teaches that advertisement information of this data is sent by the Resource Agent to the broker in order to advertise the services to the broker so that it may perform a semantic "match-making" that pairs agents seeking a particular service with agents that can perform that service. Therefore, since the data includes the set of operations allowed on the data, the data contains functional capabilities. In response to the example, since the claims do not detail limitations regarding the operation of being able to making coffee, the examiner cannot consider such a limitation, however, if the method of being able to make coffee is performed as disclosed in the cited claimed acts as disclosed in claim 1 then the teachings of Bayardo would be able to make coffee since Bayardo teaches the cited acts.

Applicant then states that claims 2-10 are allowable for at least the same reasons provided herein with respect to claim 1 and are therefore allowable for at least the same reasoning. In responding, the examiner first notes that claims 4 is canceled. Secondly, since the claims are met by the teachings of Bayardo whether alone or in combination as disclosed in the rejection and in the response to the arguments that the rejection to claims 2-10 is also maintained.

Applicant then states that claims 39, 40, 14-21, 25-28, and 41 are allowable for at least the same reasons provided herein with respect to claim 1 and are therefore allowable for at least the same reasoning. In responding, since the claims are met by the teachings of Bayardo whether alone or in combination as disclosed in the rejection

and in the response to the arguments that the rejection to claims 39, 40, 14-21, 25-28, and 41 is also maintained.

Therefore, since the cited prior art of record teach the invention as disclosed in the claims, the rejection is maintained.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lewis A. Bullock, Jr. whose telephone number is (703) 305-0439. The examiner can normally be reached on Monday-Friday, 8:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Meng An can be reached on (703) 305-9678. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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